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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/786,914	02/25/2004	Akira Nakano	9281-4793	2084

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EXAMINER
ALEJANDRO MULERO, LUZ L

ART UNIT	PAPER NUMBER
1792	

MAIL DATE	DELIVERY MODE
06/18/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/786,914	NAKANO ET AL.	
	Examiner	Art Unit	
	Luz L. Alejandro	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *17 April 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 6-7 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Kagatsume et al., US 4,908,095.

Kagatsume et al. shows the invention as claimed including a plasma treatment equipment having a chamber 12 for performing plasma treatment, the chamber having a bottom wall and a side wall, the plasma treatment equipment comprising: a plasma excitation electrode 40 to which a power for plasma excitation is supplied, the plasma excitation electrode being provided in the chamber; and a susceptor electrode 20 that is opposed to the plasma excitation electrode provided in the chamber; the susceptor electrode being an electrode into which a high frequency electric current based on the power for plasma excitation flows after passing through a plasma space; the susceptor electrode disposed within the plasma chamber and comprising a generally planar shaped electrode portion oriented substantially parallel to the bottom wall of the plasma chamber; the susceptor electrode having the same DC potential as that of a chamber wall of the chamber; and wherein a side wall of the chamber and the susceptor electrode are AC shorted to each other by a conductive metal element 27 (see, for example, fig. 5, and its description).

With respect to claims 6-7, note tha in the apparatus of Kagatsume et al. the chamber wall and the susceptor electrode are shorted at a plurality of short points disposed approximately symmetrically with respect to a center of the susceptor electrode.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2-5 are rejected under 35 U.S.C. 103(a) as being obvious over Kagatsume et al., US 4,908,095.

Kagatsume et al. is applied as above but does not expressly disclose that the susceptor electrode and the chamber wall are shorted at a location shorter than 500

mm from a side wall of the chamber wall, the shorting is performed by a metal plate, and an angle formed between the metal plate and the bottom wall is less than 45 degrees. Regarding the particular shape of the shorting element, a prima facie case of obviousness exists because the particular shape of the shorting element is a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed container was significant. Concerning the shorting location and the angle between the metal plate and the bottom wall, a prima facie case of obviousness still exists because where the only difference between the prior artand the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device absent the showing of unexpected results.

Claims 8, 13, and 22-23 are rejected under 35 U.S.C.. 103(a) as being obvious over Kagatsume et al., US 4,908,095 in view of the Admitted Prior Art (APA).

Kagatsume et al. is applied as above but does not expressly disclose that susceptor electrode further comprises a shield provided in the chamber and disposed adjacent to the susceptor electrode. APA discloses a plasma treatment equipment comprising: a top electrode 4, a bottom electrode 8, and a susceptor electrode shield 12 (see, for example, figs. 12-16, and their descriptions). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the susceptor electrode of the plasma treatment equipment of Kagatsume et al.

as to further comprise a shield in order to shield the susceptor electrode from the plasma and thereby protect the susceptor electrode and minimize contamination of the susceptor electrode.

With respect to claim 22, the particular shape of the shorting element, a prima facie case of obviousness exists because the particular shape of the shorting element is a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed container was significant.

Claims 9, 11-12, and 14-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kagatsume et al., US 4,908,095 in view of the Admitted Prior Art (APA), as applied to claims 8, 13 and 22-23 above, and further in view of Kawakami et al., JP 06-333879.

Kagatsume et al. and the APA are applied as above but does not expressly disclose that the chamber wall of the chamber and the susceptor electrode shield are AC shorted to each other. Kawakami et al. discloses a plasma treatment equipment comprising: a plasma chamber wall, a susceptor electrode 8 disposed within the plasma chamber and comprising a shield 12 disposed adjacent to the electrode portion; and wherein the bottom wall of the plasma chamber and the susceptor electrode and shield are AC shorted to each other by a conductive element 14 at a plurality of short points of the chamber wall which are disposed approximately symmetrically with respect to a center of the shield of the susceptor electrode (see, for example, figs 1-6 and their

descriptions). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of the APA as to further comprise a metal member connected between the susceptor electrode shield and the chamber wall in order to AC short the susceptor electrode/shield and the chamber wall from each other and thereby optimize the apparatus and the processes performed within by effectively preventing discharge abnormalities and external noises.

Furthermore, Kagatsume et al., APA and Kawakami et al. are applied as above but do not expressly disclose that the susceptor electrode and the chamber wall are shorted at a location shorter than 500 mm from a side wall of the chamber wall, the shorting is performed by a metal plate, and an angle formed between the metal plate and the bottom wall is less than 45 degrees. Regarding the particular shape of the shorting element, a prima facie case of obviousness exists because the particular shape of the shorting element is a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed container was significant. Concerning the shorting location and the angle between the metal plate and the bottom wall, a prima facie case of obviousness still exists because where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device absent the showing of unexpected results.

Claims 1-23 are rejected under 35 U.S.C. 103(a) as being obvious over the Admitted Prior Art (APA) in view of Kawakami et al., JP 06-333879 or Sakai et al., JP 10-032171 or Kagatsume et al., US 4,908,095.

APA shows the invention substantially as claimed including a plasma treatment equipment having a chamber 60 for performing plasma treatment, the chamber having a bottom wall and a side wall 10, the plasma treatment equipment comprising: a plasma excitation electrode 4 to which a power for plasma excitation is supplied, the plasma excitation electrode being provided in the chamber; and a susceptor electrode 8 that is opposed to the plasma excitation electrode provided in the chamber; the susceptor electrode being an electrode into which a high frequency electric current based on the power for plasma excitation flows after passing through a plasma space; the susceptor electrode disposed within the plasma chamber and comprising a generally planar shaped electrode portion oriented substantially parallel to the bottom wall of the plasma chamber and further comprising a generally planar shaped shield 12 disposed adjacent to the electrode portion, the shield being located between the electrode portion and the bottom wall of the plasma chamber; the susceptor electrode and the shield of the susceptor electrode have the same DC potential as that of a chamber wall 10 of the chamber; (see, for example, figs. 12-16, and their descriptions).

APA does not expressly disclose that the chamber wall of the chamber and the susceptor electrode/shield are AC shorted to each other. Kawakami et al. discloses a plasma treatment equipment comprising: a plasma chamber wall, a susceptor electrode 8 disposed within the plasma chamber and comprising a shield 12 disposed adjacent to

the electrode portion; and wherein the bottom wall of the plasma chamber and the susceptor electrode/shield are AC shorted to each other by a conductive element 14 at a plurality of short points of the chamber wall which are disposed approximately symmetrically with respect to a center of the shield of the susceptor electrode (see, for example, figs 1-6 and their descriptions). Additionally, Sakai et al. discloses a plasma treatment equipment comprising: a plasma chamber wall; a susceptor electrode (1/la, lb, 11) disposed within the plasma, wherein the bottom wall of the plasma chamber and the susceptor electrode are AC shorted to each other by a conductive element 12 at a plurality of short points of the chamber wall which are disposed approximately symmetrically with respect to a center of the susceptor electrode (see, for example, figs. 6-10 and their descriptions). Furthermore, Kagatsume et al. discloses a plasma treatment equipment comprising: a plasma chamber wall; a susceptor electrode 20 disposed within the plasma, wherein the bottom wall of the plasma chamber and the susceptor electrode are AC shorted to each other by a conductive element 27 at a plurality of short points of the chamber wall which are disposed approximately symmetrically with respect to a center of the susceptor electrode (see, for example, fig. 5 and its description). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of the APA as to further comprise a metal member connected between the susceptor electrode/shield and the chamber wall in order to AC Short the susceptor electrode/shield and the chamber wall from each other and thereby optimize the apparatus and the processes performed within by effectively preventing discharge abnormalities and external noises.

Furthermore and with respect to claims 2-5, 11-12, 15-16 and 20-22, APA, Kawakami et al., Sakai et al. and Kagatsume et al. do not expressly disclose that the susceptor electrode and the chamber wall are shorted at a location shorter than 500 mm from a side wall of the chamber wall, the shorting is performed by a metal plate, and an angle formed between the metal plate and the bottom wall is less than 45 degrees. Regarding the particular shape of the shorting element, a prima facie case of obviousness exists because the particular shape of the shorting element is a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed container was significant. Concerning the shorting location and the angle between the metal plate and the bottom wall, a prima facie case of obviousness still exists because where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device absent the showing of unexpected results.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir.

1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-23 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 4 and 9 of U.S. Patent No. 6,270,618. Although the conflicting claims are not identical, they are not patentably distinct from each other because base on a one one-way obviousness-type double patenting rejection test, all the limitations of claims 1, 6-10, 12-14, and 22-23 of the instant application are encompassed by claims 4 and 9 of the patent (see MPEP 804).

With respect to claims 2-5, 11, 15-21, Nakano et al. does not expressly disclose that the susceptor electrode and the chamber wall are shorted at a location shorter than 500 mm from a side wall of the chamber wall and that an angle formed between the metal plate and the bottom wall is less than 45 degrees. However, a prima facie case of obviousness still exists because where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device absent the showing of unexpected results.

Response to Arguments

Applicant's arguments filed 4/17/09 have been fully considered and are persuasive with respect to the rejection of the claims under 35 U.S.C. 251 (defective reissue declaration) but they are not persuasive with respect to the prior art rejections. Applicant argues that the unsigned declaration was not formally submitted, the examiner agrees and therefore the rejection of the claims under 35 U.S.C. 251 (defective reissue declaration) has been withdrawn. Applicant argues that the signatory of the terminal disclaimer filed on 10/19/07 is an attorney of record, as evidenced by the power of attorney filed on 9/7/04, the examiner agrees, however, it should be noted that the terminal disclaimer filed on 10/19/07 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of US Patent 6,349,670 (incorrect patent number) has been reviewed and is NOT accepted because the terminal disclaimer does not comply with 37 CFR 1.321(b) and/or (c) because: the application/patent being disclaimed has been improperly identified since the number used to identify the patent being disclaimed is incorrect. The correct number is US Patent 6,270,618. Note that a corrected terminal disclaimer has not been received, and therefore, the rejection of the claims on the ground of nonstatutory obviousness-type double patenting is respectfully maintained.

With respect to rejection of the claims under 35 USC 102 over Kagatsume et al., applicant argues that element 27 has a corrugated surface and therefore does not represent an AC short circuit since it has a higher impedance than a straight section. The examiner disagrees and respectfully points out that as broadly claimed the

chamber and the susceptor electrode are AC shorted by conductive metal element 27 (note that the claimed invention does not even recite an apparatus AC short circuit structure, it only requires that the chamber wall and the susceptor electrode are AC shorted). With respect to applicant's argument that the impedance of the conductive metal element 27 may be higher than a straight section, it should be noted that the specific degree/effectiveness of the conductive element 27 in AC shortening the chamber wall and the susceptor electrode is irrelevant. Furthermore, note that it is noted that the features upon which applicant relies (i.e., an AC short circuit structure, an AC short circuit being a straight section, and the specific effectiveness of an AC short circuit) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Regarding the Kawakami reference applicant argues that shield 12 does not have a planar shape as claimed. The examiner respectfully points out that: a) the Kawakami et al. reference is not being used to show the shape of the shield to be planar, the reference has been relied upon to show the chamber wall and a shield/susceptor electrode being AC shorted, b) the generally planar shaped shield is clearly disclosed in the APA (prior art had been relied upon to show the claimed shield), and c) as broadly claimed ("generally planar shaped shield") the limitation does not require that the whole shield be planar and is clear from the figures of the Kawakami et al. reference that the shield is mostly planar.

Additionally and with respect to rejection of the claims under 35 USC 103 over Kawakami et al., applicant argues that element 14 has a corrugated surface and therefore does not represent an AC short circuit since it has a higher impedance than a straight section. The examiner disagrees and respectfully points out that as broadly claimed the chamber and the susceptor electrode are AC shorted by conductive metal element 14 (note that the claimed invention does not even recite an apparatus AC short circuit structure, it only requires that the chamber wall and the susceptor electrode are AC shorted). With respect to applicant's argument that the impedance of the conductive metal element 14 may be higher than a straight section, it should be noted that the specific degree/effectiveness of the conductive element 27 in AC shortening the chamber wall and the susceptor electrode is irrelevant. Furthermore, note that it is noted that the features upon which applicant relies (i.e., an AC short circuit structure, an AC short circuit being a straight section, and the specific effectiveness of an AC short circuit) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

With respect to the rejections of claim 12, applicant argues that the applied references are not asserted to show, and do not show, the shield of the susceptor electrode shorted to the side wall. The examiner disagrees and respectfully points out that as broadly claimed the combination of references do disclose a shield shorted to a side wall (note that there is no specific chamber wall definitions recited for the claimed apparatus and therefore, all four walls of the chamber are considered side walls).

Furthermore, note that in all the references the side walls and bottom walls of the apparatuses are electrically connected/coupled to each other and therefore the sidewalls would be AC shorted.

With respect to Sakai et al. reference applicant argues that conductive element 12 is an inductance LC having a specific value of LC which is not a characteristic of a shorting conductor. However, it is noted that the features upon which applicant relies (i.e., shorting conductor) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Furthermore, it seems that the conductive coil 12 would selectively AC short certain frequency power and therefore, the rejection of the claims over the Sakai et al. reference is respectfully maintained.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luz L. Alejandro whose telephone number is 571-272-1430. The examiner can normally be reached on Monday to Thursday from 7:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Luz L. Alejandro/
Primary Examiner, Art Unit 1792

June 8, 2009